

Serial No.: 09/963,588

IN THE CLAIMS:

Claim-1. (Currently Amended) An optical wavelength filter ~~formed of~~ comprising:

an optical fiber or an optical waveguide, having a core and cladding, with at least one of said core and cladding being ~~formed with~~ comprising a structure ~~of having a~~ periodically varying diffraction coefficient extending along a direction of propagation of light through said filter, and with at least one parameter of said periodically varying diffraction coefficient structure continuously varying along said direction of propagation ~~such as to create~~ for creating a range of reflection wavelengths of said filter, ~~wherein:~~

said periodically varying diffraction coefficient structure comprises at least one interruption portion ~~in which~~ interruption of interrupting said continuous variation, ~~occurs,~~ ~~for~~ thereby creating a corresponding passband of said filter, with said passband located at a predetermined position within said range of reflection wavelengths,

said periodically varying diffraction coefficient structure
has a fixed pitch,

Serial No.: 09/963,588

said parameter which continuously varies is an average value of a diffraction coefficient of said periodically varying diffraction coefficient structure, and

said at least one interruption portion comprises a portion of said periodically varying diffraction coefficient structure at which a transition occurs from a first average value of a diffraction coefficient to a second average value of a diffraction coefficient.

2.-5. (Cancelled)

~~Claim 6.~~ (Currently Amended) ~~An~~ The optical wavelength bandpass filter ~~as claimed in~~ according to claim 5, wherein said interruption portion of said periodically varying diffraction coefficient structure ~~(40)~~ comprises a discontinuity ~~(41)~~ in said continuous variation of a diffraction coefficient, said discontinuity being located at a predetermined position along said periodically varying diffraction coefficient structure.

Serial No.: 09/963,588

~~Claim-7.~~ (Currently Amended) ~~TheAn~~ optical wavelength bandpass filter according to~~as claimed in~~ claim 5, wherein said interruption portion of said periodically varying diffraction coefficient structure~~-(55)-~~ comprises an interruption region~~-(56)-~~ of predetermined length extending along said direction of propagation and located at a predetermined position along said periodically varying diffraction coefficient structure, with said continuous variation of said average value of a diffraction coefficient being interrupted within said interruption region.

~~Claim-8.~~ (Currently Amended) ~~TheAn~~ optical wavelength bandpass filter according to~~as claimed in~~ claim 1, wherein said parameter which continuously varies is a combination of a continuously varying average value of a diffraction coefficient of said periodically varying diffraction coefficient structure and a continuously varying pitch of said periodically varying diffraction coefficient structure, and wherein said interruption portion of said periodically varying diffraction coefficient structure~~-(60)-~~ comprises a discontinuity~~-(61)-~~ located at a predetermined position along said periodically varying diffraction coefficient structure, with a transition from a

Serial No.: 09/963,588

first average value of a diffraction coefficient to a second average value of a diffraction coefficient, and also a transition from a first value of said pitch to a second value of said pitch, respectively occurring at said discontinuity.

Claim 9. (Currently Amended) ~~The~~ An optical wavelength bandpass filter according to ~~as claimed in~~ claim 1, wherein said parameter which continuously varies is a combination of a continuously varying average value of a diffraction coefficient of said periodically varying diffraction coefficient structure and a continuously varying pitch of said periodically varying diffraction coefficient structure, wherein said interruption portion comprises an interruption region of predetermined length extending along said direction of propagation and located at a predetermined position along said periodically varying diffraction coefficient structure, wherein said continuous variation of said pitch and said continuous variation of said average value of a diffraction coefficient are respectively interrupted in said interruption region

Serial No.: 09/963,588

~~Claim-10.~~ (Currently Amended) ~~The~~An optical wavelength bandpass filter according to~~as claimed in~~ claim 1, wherein said periodically varying diffraction coefficient structure is formed by selective application of heat.

~~Claim-11.~~ (Currently Amended) ~~The~~An optical wavelength bandpass filter according to~~as claimed in~~ claim 10, comprising heat application control means for dynamically controlling the formation of said periodically varying diffraction coefficient structure by application of selected levels of heat to predetermined locations of said optical fiber or optical waveguide.

~~Claim-12.~~ (Currently Amended) ~~The~~An optical wavelength bandpass filter according to~~as claimed in~~ claim 11, wherein said heat application control means comprises a plurality of heater elements~~-(22)-~~ which are disposed upon a section of said optical fiber or optical waveguide~~-(19)-~~ and are arrayed successively along said direction of propagation, means~~-(26, 27)-~~ for supplying respective levels of current to said heater elements, and means~~-(22, 23, 25)-~~ controllable for adjusting said levels of

Serial No.: 09/963,588

current to produce a desired configuration of said periodically varying diffraction coefficient structure within said section of said optical fiber or optical waveguide.

~~Claim-13.~~ (Currently Amended) ~~The~~—An optical wavelength bandpass filter according to~~as claimed in~~ claim 1, wherein said periodically varying diffraction coefficient structure is formed by selective application of mechanical stress.

~~Claim-14.~~ (Currently Amended) ~~The~~—An optical wavelength bandpass filter according to~~as claimed in~~ claim 1, wherein said periodically varying diffraction coefficient structure is formed by selective application of electric fields.

Claim 15. (Withdrawn) A method of manufacturing an optical wavelength bandpass filter comprising:

disposing a phase mask (13) adjacent to a section of an optical fiber (11) or optical waveguide,

interposing a blocking mask (14) between said phase mask and said optical fiber or optical waveguide, said blocking mask being adapted to obstruct transmission of light from said phase

Serial No.: 09/963,588

mask into at least one predetermined region of said optical fiber or optical waveguide, and

illuminating said phase mask with ultraviolet light (10), to thereby generate an optical diffraction pattern within said optical fiber or optical waveguide other than within at least one interruption region, with generation of said diffraction pattern within said interruption region being obstructed by said blocking mask.